Incident: 6DG3 Debut Reflux Pump Failure
Date: 12/1/2010

Recommendations / Corrective Actions from the Investigation Report (see Tab name for investigation reference):

			Completion Date	Action Item No.
Pump Operation Continuously Below Minimum Flow				
	1. Adjust operation of both 6DG3 and 6DG3A pumps to move normal operating values to above minimum flow by reducing the normal operating speed to 2850 rpm. Minimum flow of 315 BPH @ 2850 rpm.	Assigned to: Matt Shores Due Date: per M2011225-001	6/7/2011	
	2. Implement pumps low flow target alarm of 315 BPH.	Assigned to: Matt Shores Due Date: same day as M2011225-001	3/10/2011	
	3. Evaluate ability to re-rate 6DG3 to improve pump efficiency. *(COMPLETED)*			
	4. Evaluate ability to re-rate 6DG3A to improve pump efficiency. *(COMPLETED)*			
	5. Evaluate need for minimum flow recirculation line. *(COMPLETE)*			
Pump Seal Lubrication Design (Vapor Pressure and flush flow)				
	6. For interim mitigation, ensure the current seal flush orifice sizes that are installed are correct for both 6DG3 and 6DG3A, modify as needed and ensure they are not plugged. *(COMPLETE)*			
	7. Complete installation of API Plan 53B on 6DG3A and ensure this pump is used as a primary pump.	Assigned to: Jim Walker Due Date: 5/30/12	4/20/2012	582725
Communication of Changes to Pump Seals				

8.	Conduct a Learning Session with all personnel in Machinery discipline and Flowserve. *(COMPLETE)*			
9.	Added pump repair sheet item to verify that the pump seal drawing orifice diameter matches the orifice diameter installed in the field. *(COMPLETE)*			
10.	Validate flush orifice size calculation process.	Assigned to: Jaylynn Jackson Due Date: 7/2/12	5/10/2012	582726
11.	Develop assurance process to where machinists have been provided a written plan for seal/seal plan changes with correct drawing prior to beginning work on machinery changes.	Assigned to: Jaylynn Jackson Due Date: 7/2/12	5/23/2012	582727
12.	Develop and execute process for MEI to review and approve any seal or seal plan drawings prior to work continuing (MOC approval or in machine shop).	Assigned to: Jaylynn Jackson Due Date: 7/2/12	5/23/2012	582730
13.	Modify procedures at Machine Shop that when executing seal and seal plan changes (where an MOC is used), written specifics will be required before beginning re-build work (that is, after tear down and inspection).	Assigned to: Michael Burke Due Date: 9/2/12	8/15/2012	582731
14.	Conduct audit effectiveness of approved corrective action (for 6DG3A Seal Leak Investigation) made in MEI-Flowserve-Machinist work process and report back to Engineering Manager (over both MEI and Machinists).	Assigned to: Matt Shores Due Date: 4/2/13	3/22/2013	582732

Seal Water Quench Drain

15.	Update API plan 62 water quench standard drawing to include a note regarding potential issues to consider when opening the drain line. *(COMPLETED)*			
16.	Conduct a survey for any disaster bushings with open drains from quench in all services. Develop recommendations for mitigation, if any. Open additional Fountain action items as necessary.	Assigned to: Jaylynn Jackson Due Date: 4/5/12	3/30/2012	582733
17.	Validate if an API Plan 62 could be used in light hydrocarbon services.	Assigned to: Jaylynn Jackson Due Date: 4/5/12	3/20/2012	582734